

**Amendments to the Claims:**

A listing of the entire set of pending claims (including amendments to the claims, if any) is submitted herewith per 37 CFR 1.121. This listing of claims will replace all prior versions, and listings, of claims in the application.

**Listing of Claims:**

Claim 1 (Canceled)

2.(Currently Amended) A method to provide color temperature correction in emission spectra of a phosphor converted LED under PWM current drive, the method comprising:

sensing a correlated color temperature (CCT) of the LED emission spectra of the LED;

determining a modulation for a driving current signal by calculating needed parameters for the modulation based on at least the sensed CCT, based on manufacturer data, and based on a desired CCT under varying operational conditions including temperature, total light output, and phosphor composition, wherein the calculating includes simultaneously solving at least two equations using a pre-selected coordinate pair for the desired CCT;

modulating a constant magnitude current signal based on the determined modulation; and

applying the modulated current signal to cause a color temperature correction in the emission spectra of the LED,

wherein determining the current signal modulation comprises determining a first color coordinate set representing the LED emission spectra at a first operational temperature corresponding to a desired CCT, and determining a second color coordinate set representing a CCT shift in the LED emission spectra due to operation

of the LED at a second operational temperature corresponding to the sensed CCT, the color temperature correction corresponding to the CCT shift.

3.(Previously Presented) The method of claim 2, wherein applying the determined current signal modulation to the LED causes the LED emission spectra at the first color coordinate set to be substantially constant as the LED operational temperature changes from the first LED operational temperature to the second LED operational temperature.

4.(Previously Presented) The method claim 2, wherein modulating the constant magnitude current signal comprises changing a frequency of the current signal.

5.(Previously Presented) The method of claim 2, wherein modulating the constant magnitude current signal comprises changing a duty-cycle of the current signal.

6.(Previously Presented) The method of claim 5, wherein the total light output of the LED is changed responsive to the changing of the current signal duty cycle.

7.(Previously Presented) The method of claim 5, wherein a frequency of the current signal is changed to maintain a constant total light output of the LED.

8.(Previously Presented) The method of claim 2, wherein applying the modulated current signal comprises selectively coupling a power supply to the LED based on the determined modulation.

9.(Previously Presented) The method of claim 8, wherein the LED is a phosphor converted white light LED.

10.(Previously Presented) The method of claim 9, wherein a junction emission intensity of the LED is substantially constant while a phosphor emission intensity increases responsive to the current signal modulation.

11.(Currently Amended) An apparatus to provide color temperature correction in an emission spectra of a phosphor converted LED 520, the apparatus comprising:

a phosphor converted LED;

a color sensor configured to sense a correlated color temperature (CCT) of the LED emission spectra of the phosphor converted LED; and

a color correction control circuit coupled to the phosphor converted LED and the color sensor, the control circuit being configured to determine a modulation for a driving current signal of the LED by calculating needed parameters for the modulation based on the sensed CCT, based on manufacturer data, and based on a desired CCT under varying operational conditions including temperature, total light output, and phosphor composition, to modulate a constant magnitude current signal based on the determined modulation, and to apply the modulated current signal to the LED to cause a color temperature correction in an emission spectra of the LED, wherein the calculating includes simultaneously solving at least two equations using a pre-selected coordinate pair for the desired CCT, and

wherein determining the current signal modulation includes determining a first color coordinate set representing LED emission spectra at a first LED operational temperature corresponding to a desired CCT, and determining a second color coordinate set representing a CCT shift in the LED emission spectra due to operation of the LED at a second operational temperature corresponding to the sensed CCT, the color temperature correction corresponding to the CCT shift.

12.(Previously Presented) The apparatus of claim 11, wherein the color correction control circuit comprises a constant-current magnitude pulse width modulator circuit having configurable frequency and duty cycle.

13. (Previously presented) The apparatus of claim 12, wherein the color correction control circuit further comprises a power supply configured to selectively deliver power to the pulse width modulator circuit.

14.(Previously Presented) The apparatus of claim 11, wherein the color correction control circuit comprises a processor control system.

15.(Previously Presented) The apparatus of claim 14, wherein the processor control system is configured to determine the modulation for the driving current signal to modulate the constant magnitude current signal based on the determined modulation, and to apply the modulated current signal to the LED to cause the color temperature correction in the emission spectra of the LED.

16.(Previously Presented) The apparatus of claim 15, wherein applying the determined current signal modulation to the LED causes the LED emission spectra at the first color coordinate set to be substantially constant as the LED operational temperature changes from the first LED operational temperature to the second LED operational temperature.

17.(Previously Presented) The apparatus of claim 11, wherein the LED is a white light phosphor converted LED.

18.(Previously Presented) The apparatus of claim 15, wherein the LED is an InGaN phosphor converted white-light LED.

19.(Currently Amended) A system to provide color temperature correction in an emission spectra of a constant current PWM driven phosphor converted white-light LED, the system comprising:

means for sensing a correlated color temperature (CCT) of the LED emission spectra of the phosphor converted LED;

means for determining a driving current modulation to cause a color correction to the emission spectra of the LED by calculating needed parameters for the modulation based on the sensed CC, based on manufacturer data, and based on a desired CCT under varying operational conditions including temperature, total light output, and phosphor composition, wherein the calculating includes simultaneously solving at least two equations using a pre-selected coordinate pair for the desired CCT;

means for modulating a current signal with the determined modulation;

means for applying the modulated current signal to cause a color temperature correction in the emission spectra of the LED,  
wherein determining the current signal modulation includes determining a first color coordinate set representing LED emission spectra at a first LED operational temperature corresponding to a desired CCT, and determining a second color coordinate set representing a CCT shift in the LED emission spectra due to operation of the LED at a second operational temperature corresponding to the sensed CCT, the color temperature correction corresponding to the CCT shift .